

## **REMARKS**

Claims 1-17 were pending, and Claims 5-7 were under consideration. In this response, Claims 1-4 and 8-17 are cancelled, and Claims 5 and 7 are amended. Accordingly, following entry of the present amendment, Claims 5-7 are pending and under consideration.

### **I. The Amendments to the Claims**

Claims 1-4 and 8-17 are cancelled in the present amendment as drawn to a non-elected invention without prejudice to Applicants' right to pursue the subject matter of the cancelled claims in one or more divisional or continuation patent applications. In addition, Claims 5 and 7 have been amended in order to more particularly point out and distinctly claim Applicants' invention, without changing the scope of the amended claims, and to correct minor typographical errors. The amendments to Claims 5 and 7 are fully supported throughout the application and particularly at, for example, Claims 5 and 7 as originally filed and in the Specification at page 4, lines 22-24. Thus, the amendments to the claims do not introduce new matter. Accordingly, Applicants respectfully request entry of the present amendment to the claims under 37 C.F.R. § 1.111.

### **II. The Objection to the Drawings**

In the Office Action mailed August 27, 2003, the PTO refers to a Notice of Draftsperson's Patent Drawing Review and objects to the drawings, indicating that new corrected drawings are required to correct alleged defects in the drawings. In a subsequent teleconference, the PTO indicated that this objection is in error and that the drawings have been accepted by the PTO. Accordingly, Applicants respectfully request withdrawal of the objection to the drawings and that the PTO acknowledge the acceptance of the drawings in the next Official Action.

### **III. The Rejection of Claims 5-7 under 35 U.S.C. 102(b)**

Claims 5-7 stand rejected as allegedly anticipated by Zhu *et al.*, 1991, *Nucleic Acids Research* 19(9):2511 ("Zhu"). In response, Applicants respectfully submit that Zhu does not teach each and every element of the claimed invention. Accordingly, Applicants respectfully submit that the rejection of Claims 5-7 as anticipated by Zhu under 35 U.S.C. § 102(b) is in error.

**A. The Legal Standard**

The standard governing anticipation under 35 U.S.C. § 102 requires strict identity. See M.P.E.P. § 2131. Thus, “for a prior art reference to anticipate in terms of 35 U.S.C. § 102, every element of the claimed invention must be identically shown in a single reference.” See *In re Bond*, 15 U.S.P.Q.2d 1566 (Fed. Cir., 1990). Anticipation is not shown even when the differences between the claims and the cited reference are allegedly “insubstantial” and any missing elements could be supplied by the knowledge of one skilled in the art. See *Structural Rubber Prod. Co. v. Park Rubber Co.*, 223 U.S.P.Q. 1264 (Fed. Cir., 1984). Furthermore, in *Jamesbury Corp. v. Litton Industrial Products, Inc.*, 225 U.S.P.Q. 253 (Fed. Cir., 1985), the Federal Circuit explained that even if the prior art teaches “substantially the same thing” as the claimed invention, the reference still cannot anticipate the invention. Thus, a cited reference must describe each and every claim limitation in order to anticipate the invention as claimed.

**B. Zhu does not Teach Each and Every Element of the Claimed Invention**

Each of Claims 5-7 recites a composition comprising, *inter alia*, a first thermostable enzyme exhibiting 3'-5' exonuclease activity but essentially no DNA polymerase activity. In contrast, *Zhu* teaches a composition comprising exonuclease III, an enzyme with 3'-5' exonuclease activity that is not thermostable. In fact, *Zhu* teaches heat inactivation of that exonuclease III by treatment of *Zhu's* composition at 95°C for five minutes. See *Zhu* at page 2511, paragraph bridging columns. Thus, the thermostable enzyme with 3'-5' exonuclease activity recited by Claims 5-7 is distinctly different from the non-thermostable enzyme with 3'-5' exonuclease activity in the composition of *Zhu*.

Moreover, as *Zhu* teaches heat inactivation of the enzyme with 3'-5' exonuclease activity, *Zhu* actually teaches away from compositions comprising a thermostable enzyme with 3'-5' exonuclease activity. The focus of *Zhu* is minimizing contamination of new PCR reactions with previously amplified sequences by degrading single stranded DNA, including such previously amplified sequences. *Zhu* accomplishes this goal by including within the reaction composition a thermolabile enzyme with 3'-5' exonuclease activity, then inactivating the enzyme with 3'-5' exonuclease activity with heat, prior to conventional PCR amplification. Although *Zhu* does not explain why such heat inactivation is necessary, one of skill in the art would understand that inactivation prevents the enzyme from affecting the subsequent amplification reaction or the products thereof. Thus, the ordinarily-skilled artisan would conclude that compositions comprising a thermostable rather than thermolabile

enzyme with 3'-5' exonuclease activity are not suitable or useful for *Zhu*'s heat inactivation methods.

Further, Applicants note that *Zhu* provides no motivation or suggestion to substitute a thermostable enzyme with 3'-5' exonuclease activity for the thermolabile exonuclease III taught therein. *Zhu* is concerned with decreasing contamination of new PCR reactions with previously amplified sequences by degrading single stranded DNA, including such previously amplified sequences. The solution of this alleged problem as taught by *Zhu* would not be improved by including a thermostable enzyme with 3'-5' exonuclease activity. Further, *Zhu* in no way teaches or suggests that any desirable property of the compositions of *Zhu* can be improved by including a thermostable rather than thermolabile enzyme with 3'-5' exonuclease activity in the reaction mixture.

In contrast, the present application teaches that the compositions of the invention when used in an amplification reaction result in both increased fidelity, *i.e.*, more accurate amplification, and in longer amplification products. *See, e.g.*, the specification at page 18, line 19 to page 20, line 27, Figures 6A and 6B, the specification at page 21, line 30 to page 23, line 2, and Figure 9. *Zhu* provides no such similar teaching regarding these or any other advantages of compositions comprising a thermostable enzyme with 3'-5' exonuclease activity. Thus, *Zhu* provides no motivation to substitute a thermostable enzyme with 3'-5' exonuclease activity for the thermolabile enzyme with 3'-5' exonuclease activity in the composition of *Zhu*. Therefore, Applicants respectfully submit that the compositions of the invention are not obvious over *Zhu*.


In view of the foregoing, Applicants respectfully submit that *Zhu* does not teach or suggest a composition comprising, *inter alia*, a thermostable enzyme exhibiting 3'-5' exonuclease activity but essentially no DNA polymerase activity. Accordingly, Applicants respectfully submit that the rejection of Claims 5-7 as anticipated by *Zhu* under 35 U.S.C. § 102(b) is in error and earnestly request its withdrawal.

### CONCLUSION

In view of the above amendments and remarks, Applicants respectfully submit that Claims 5-7 fully comply with all statutory requirements for patentability. Accordingly, Applicants respectfully request that the PTO reconsider the claims of this application with a view towards allowance. The Examiner is invited to telephone the undersigned attorney, if the Examiner feels that a teleconference could help resolve any outstanding issues.

Respectfully submitted,

Date: November 26, 2003

  
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